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PTO/SB/05 (11-00)

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**UTILITY
PATENT APPLICATION
TRANSMITTAL**

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	41003.P038
First Inventor	Jeffrey G. Ort
Title	Techniques For Displaying Non-blocking Always Visible Displays and Their Applications
Express Mail Label No.	EL605443126US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☒ Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)
2. ☒ Applicant claims small entity status.
See 37 CFR 1.27.
3. ☒ Specification [Total Pages **34**]
(preferred arrangement set forth below)
 - Descriptive title of the invention
 - Cross Reference to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to sequence listing, a table, or a computer program listing appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
4. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets **10**]
5. Oath or Declaration [Total Pages **4**]
 - a. ☒ Newly executed (original or copy)
 - b. ☐ Copy from a prior application (37 CFR 1.63 (d))
(for continuation/divisional with Box 18 completed)
 - i. ☐ **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
6. ☐ Application Data Sheet. See 37 CFR 1.76

ADDRESS TO: Assistant Commissioner for Patents
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Washington, DC 20231

7. ☐ CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix)
8. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
 - a. ☐ Computer Readable Form (CRF)
 - b. Specification Sequence Listing on:
 - i. ☐ CD-ROM or CD-R (2 copies); or
 - ii. ☐ paper
 - c. ☐ Statements verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

9. ☒ Assignment Papers (cover sheet & document(s))
10. ☐ 37 CFR 3.73(b) Statement (when there is an assignee) ☒ Power of Attorney
11. ☐ English Translation Document (if applicable)
12. ☐ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations
13. ☐ Preliminary Amendment
14. ☒ Return Receipt Postcard (MPEP 503) (Should be specifically itemized)
15. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)
16. ☐ Request and Certification under 35 U.S.C. 122 (b)(2)(B)(i). Applicant must attach form PTO/SB/35 or its equivalent.
17. ☐ Other:

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76:

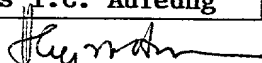
☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: _____

Prior application information: Examiner _____ Group Art Unit: _____

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FEE TRANSMITTAL for FY 2001

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT (\$)**953.00**

Complete if Known

Application Number	Not yet assigned
Filing Date	November 20, 2000
First Named Inventor	Jeffrey G. Ort
Examiner Name	Not yet assigned
Group Art Unit	Not yet assigned
Attorney Docket No.	41003.P038

METHOD OF PAYMENT

1. ☒ The Commissioner is hereby authorized to charge ~~XXXX~~ credit any overpayments to:
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- ☒ Applicant claims small entity status. See 37 CFR 1.27
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- ☒ Check ☐ Credit card ☐ Money Order ☐ Other

FEE CALCULATION

1. BASIC FILING FEE

Large Entity	Small Entity	Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
		101	710	201	355	Utility filing fee	355.00
		106	320	206	160	Design filing fee	
		107	490	207	245	Plant filing fee	
		108	710	208	355	Reissue filing fee	
		114	150	214	75	Provisional filing fee	

SUBTOTAL (1) (\$)**355.00**

2. EXTRA CLAIM FEES

Total Claims **42** -20** = **22** x **9.00** = **198.00**

Independent Claims **12** -3** = **9** x **40.00** = **360.00**

Multiple Dependent =

Large Entity	Small Entity	Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
		103	18	203	9	Claims in excess of 20	
		102	80	202	40	Independent claims in excess of 3	
		104	270	204	135	Multiple dependent claim, if not paid	
		109	80	209	40	** Reissue independent claims over original patent	
		110	18	210	9	** Reissue claims in excess of 20 and over original patent	

SUBTOTAL (2) (\$)**558.00**

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

Large Entity	Small Entity	Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
		105	130	205	65	Surcharge - late filing fee or oath	
		127	50	227	25	Surcharge - late provisional filing fee or cover sheet	
		139	130	139	130	Non-English specification	
		147	2,520	147	2,520	For filing a request for <i>ex parte</i> reexamination	
		112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
		113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
		115	110	215	55	Extension for reply within first month	
		116	390	216	195	Extension for reply within second month	
		117	890	217	445	Extension for reply within third month	
		118	1,390	218	695	Extension for reply within fourth month	
		128	1,890	228	945	Extension for reply within fifth month	
		119	310	219	155	Notice of Appeal	
		120	310	220	155	Filing a brief in support of an appeal	
		121	270	221	135	Request for oral hearing	
		138	1,510	138	1,510	Petition to institute a public use proceeding	
		140	110	240	55	Petition to revive - unavoidable	
		141	1,240	241	620	Petition to revive - unintentional	
		142	1,240	242	620	Utility issue fee (or reissue)	
		143	440	243	220	Design issue fee	
		144	600	244	300	Plant issue fee	
		122	130	122	130	Petitions to the Commissioner	
		123	130	123	130	Petitions related to provisional applications	
		126	180	126	180	Submission of Information Disclosure Stmt	
		581	40	581	40	Recording each patent assignment per property (times number of properties)	40.00
		146	710	246	355	Filing a submission after final rejection (37 CFR § 1.129(a))	
		149	710	249	355	For each additional invention to be examined (37 CFR § 1.129(b))	
		179	710	279	355	Request for Continued Examination (RCE)	
		169	900	169	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$)**40.00**

SUBMITTED BY

Name (Print/Type)	Aloysius T.C. AuYeung	Registration No. (Attorney/Agent)	35,432	Telephone	503-534-2800
Signature		Date	11/20/00		

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APPLICATION FOR UNITED STATES LETTERS PATENT

FOR

**Techniques For Displaying Non-blocking Always Visible
Displays And Their Applications**

Inventor(s):
Jeffrey G. Ort
Eric Engstrom

Prepared by:

COLUMBIA IP LAW GROUP, LLC

"Express Mail" label number: EL605443126US

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Techniques for Displaying Non-Blocking Always Visible Displays
and Their Applications

BACKGROUND OF THE INVENTION

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1. Field of the Invention

The present invention relates to the fields of data processing. More specifically, the present invention relates to the provision of graphical user interface.

10 2. Background Information

Graphical user interface (GUI) is known in the art. In modern computing, it is customary for operating systems that support GUIs to support windowing of displays, to allow concurrent displays of execution results of multiple applications executing at the same time, as long as the corresponding display windows of the applications do not overlap or block each another. Typically, if the display windows overlap, one display window, e.g. the focus window, is considered to be the "top" window, and its contents are made visible. All other contents located in areas of the other display window overlaid by the "top" window are "blocked", and accordingly not visible.

20 In certain applications, such as annotating a document, it is desirable to simulate the effect of transparency. That is, the contents of the underlying display windows, including e.g. the icons of the desktop are made visible. See e.g. IBM Technical Disclosure Bulletins, April 1988, pp.268-270, and June 1994, pp.303-304.

25 A number of techniques for creating transparent or translucent windows are known in the art. For example, U.S. Patent 4,868,765 disclosed a substantially hardware approach, employing a controller having what is referred to as a "porthole

bit save array, where its content may be selectively transferred into a screen memory. Another example is U.S. Patent 5,999,191 a software approach for selectively blending the contents of a number of display windows to achieve the transparency or translucent effect is disclosed. The technique is designed for implementation by an operating system (as applications generally do not have access to the contents of the display windows of other applications).

However, in a number of execution environments, such as the Windows' Operating System of Microsoft Corp, Redmond, WA, while the operating system supports GUIs and windowing of displays, the operating system does not provide any support for transparent or translucent windows. As a result, the evolution of GUIs to provide ever more satisfying user experience in these environments has been stymied. For example, while the task bar is a very useful feature, in order to minimize its blocking effect on other windows, it typically has to be either hidden or kept to a relatively small size. Obviously, if it is hidden, it has to be re-displayed whenever it is needed, and while it is hidden, the descriptions of the various open windows are not visible. But even if it is displayed, as a result of its typical small size, the descriptions of the various open windows are virtually incomprehensible most of the times. Similarly, if a user desires to monitor the on-line world, e.g. to continually receive stock quotes or news headlines, as increasingly more and more users want to do, again in order minimize its blocking effect on other windows, the monitoring browser window must be kept relatively small and at a corner. Moreover, there is no visible differentiation between the windows displaying results of locally executed applications, and contents streamed from the on-line world. Likewise, while the emergence of an animated assistant improves a user's experience, its presence often blocks access to various contents or function buttons/icons. As a result, a user has to frequently relocate the animated assistant or "close" it. Further,

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manufacturers and/or content providers would like to be able to persistently display an always visible logo or other identifying marks, if not for the concern of irritating a user because the logo/mark may obstruct the user's view of other contents.

Thus, additional techniques for displaying and applying non-blocking always
5 visible displays (including windows), especially in operating environments where such supports are not provided by the operating system, are desired.

SUMMARY OF THE INVENTION

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A non-blocking always visible display application is provided to copy and save first pixel values corresponding to a first display screen area, blend the copied first pixel values with second pixel values corresponding to a non-blocking always visible display to generate third pixel values, and replace the original first pixel
15 values with the third pixel values to effectuate display of the non-blocking always visible display.

In one embodiment, the application further monitors for display operations that impact the first display screen area, and upon detection of such a display operation, replaces the third pixel values with the first pixel values using the saved
20 first pixel values. Thereafter, upon completion of the impacting display operation, the application copies and saves fourth pixel values corresponding to the first display screen area, blends the copied fourth pixel values with the second pixel values to generate fifth pixel values, and replaces the original fourth pixel values with the fifth pixel values to sustain the non-blocking always visible characteristic of
25 the non-blocking always visible display. In one embodiment, the re-blending and replacement is advantageously delayed to improve efficiency of operation.

In another embodiment, the application further intercepts cursor events associated with the first display screen area, and determines whether the cursor events are to be handled or to be handled by another application program associated with an underlying display window, based at least in part on a current
5 blending bias between the non-blocking always visible display and the underlying display windows.

In one embodiment, the non-blocking always visible display is a window. In other embodiments, it is an on-line data monitor, a task bar, an animated assistant or a logo/mark.

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BRIEF DESCRIPTION OF DRAWINGS

The present invention will be described by way of exemplary embodiments, but not limitations, illustrated in the accompanying drawings in which like references
5 denote similar elements, and in which:

Figures 1a-1e illustrate a number of end user interface views of a number of contemplated applications of the present invention, in accordance with a number of embodiments;

Figure 2 illustrates a component view of a system, incorporated with the non-
10 blocking always visible display application of the present invention, in accordance with one embodiment;

Figures 3-7 illustrate the operational flow of the relevant aspects of the non-
blocking always visible display application of **Fig. 1**, including its overall flow,
response to a display call, response to a blend sub-function call, response to an
15 intercepted display screen memory operation function call, response to a relevant cursor event, in accordance with one embodiment each; and

Figure 8 illustrates an architectural view of an example computer system
suitable for practicing the present invention, in accordance with one embodiment.

DETAILED DESCRIPTION OF THE INVENTION

In the following description, various aspects of the present invention will be described. However, it will be apparent to those skilled in the art that the present
25 invention may be practiced with only some or all aspects of the present invention. For purposes of explanation, specific numbers, materials and configurations are set

forth in order to provide a thorough understanding of the present invention. However, it will also be apparent to one skilled in the art that the present invention may be practiced without the specific details. In other instances, well known features are omitted or simplified in order not to obscure the present invention.

5 Parts of the description will be presented using terms such as end-user interfaces, buttons, and so forth, commonly employed by those skilled in the art to convey the substance of their work to others skilled in the art. Parts of the description will be presented in terms of operations performed by a computing device, using terms such as monitoring, intercepting, copying, saving, replacing, and so forth. As
10 well understood by those skilled in the art, these quantities and operations take the form of electrical, magnetic, or optical signals capable of being stored, transferred, combined, and otherwise manipulated through mechanical and electrical components of a digital system. The term digital system includes general purpose as well as special purpose computing machines, systems, and the like, that are standalone,
15 adjunct or embedded.

Various operations will be described in turn in a manner that is most helpful in understanding the present invention, however, the order of description should not be construed as to imply that these operations are necessarily order dependent.

Furthermore, the phrase "in one embodiment" will be used repeatedly, however the
20 phrase does not necessarily refer to the same embodiment, although it may.

Overview of Applications

Referring now to **Figures 1a-1e**, wherein five block diagrams illustrating a number of end user views of a number of applications of the present invention, in
25 accordance with one embodiment each, are shown. As illustrated in **Fig. 1a**, the non-blocking always visible display application of the present invention is designed

to be able to generate known non-blocking always visible display window, as exemplified by window **104**, where both contents of window **104** as well as contents of window **102** in their intersecting area **106** are visible. However, as will be described in more detail below, the non-blocking always visible display application of the present invention generates the non-blocking always visible display window in the role of an application, without operating system or hardware supports designed to support the generation of transparent/translucent display windows.

As illustrated in **Figs 1b-1e**, the present invention contemplates the extension of the capabilities of the non-blocking always visible display applications into the generation of non-blocking always visible on-line data monitor, such as monitor **106**, for monitoring on-line stock data, headlines and the like, non-blocking always visible tool bars, such as tool bar **124**, non-blocking always visible animated objects, such as assistant **134**, and non-blocking always visible logo/mark, such as mark **146**. In each case, "underlying" contents in the intersecting display screen areas, such as areas **108**, **128**, **136**, and **144**, are also visible (as well as interactable). As a result of this visibility (and interactability), it is much more acceptable to keep on-line monitor **106**, tool bar **124**, animated object **134** and logo/mark **144** open, displayed or running.

Component View of Environment

Referring now to **Figure 2**, wherein a block diagram illustrating a component view of a system environment suitable for practicing the present invention, in accordance with one embodiment. As illustrated, system environment **200** include operating system **204** having window manager **206**, graphics services **208** and device drivers **210**, offering a number of system services in support of applications, such as applications **202**. Among the services offered are windowing services

offered by window manager **206** to facilitate concurrent display of the execution results of multiple applications **202** executing at the same time. The services also include graphics services offered by graphics services **208** to facilitate graphics rendering by the executing applications. These graphics services include high level graphics calls for rendering complex graphical objects, as well as low level "direct draw" services for rendering low level detail graphical primitives. Device drivers **210** offer various device specific services, including in particular display rendering and associated operations on the pixel value contents of the display screen memory (not shown). Further, operating system **204** includes services for notifying applications **202** of cursor events associated with the display windows of the applications, as well as automatic handling of a number of basic cursor events, e.g. "dragging" or otherwise relocating a display window. However, it is not necessary for operating system **204** to offer any service specifically designed to support the generation and rendering of transparent/translucent displays.

Non-blocking always visible display application **212** operates as an application to operating system **204**, just like any other applications **202**. If operating system **204** offers re-direction services for re-directing function calls and/or cursor events, non-blocking always visible display application **212** would take advantage of these services, and registers itself for such re-direction. However, such services are optional. If they are not offered, non-blocking always visible display application **212** effectuates the desired re-directs, through one of a number of call/notification interception techniques known in the art, e.g. through modification of the task table of operating system **204**.

Overall Operational Flow

Figure 3 illustrates the overall operational flow of the relevant aspects of non-blocking always visible display application **212** of the present invention, in accordance with one embodiment. As illustrated, during initialization or set up time, non-blocking always visible display application **212** would “register” itself (as described earlier) with operating system **204** to redirect all display screen memory operation calls to device driver **210** to itself, block **302**. Thereafter, non-blocking always visible display application **212** would await for event notifications (including redirected “calls”), block **304**. Upon notified of an event, non-blocking (NB) always visible display application **212** would handle the notification accordingly, block **306**. In particular, NB always visible display application **212** would handle certain call and cursor event redirections as set forth below.

Response to Displaying a NB Always Visible Display

Figure 4 illustrates the operational flow of the relevant aspects of NB always visible display application **212** of the present invention, when responding to a request to render a NB always visible display, in accordance with one embodiment. As illustrated, in response to a call (e.g. by another application) to render such display, e.g. NB always visible window **104**, on-line data monitor **106**, tool bar **124**, animated assistant **134**, and logo/mark **144**, NB always visible application **212** determines the physical location of the display screen area, on which the NB always visible display is to be displayed. The determination is typically made by mapping the logical location information provided with the function call to the actual physical location. Alternatively, such as the contemplated logo/mark application, the location may be defaulted to an initial area.

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Thereafter, NB always visible display application **212** causes the original corresponding pixel values in the display screen memory to be replaced by the newly generated pixel values representing the blended content, block **506**. In one embodiment, NB always visible display application **212** stores the pixel values of the blended content in a third buffer (also not shown), and marks the buffer as “dirty” (i.e. its content changed). For this embodiment, NB always visible display application **212** includes a “thread” that periodically checks to determine if the blended content buffer has been marked “dirty”. If not, no action is taken. But, if it is, it copies the newly generated pixel values from the blended content buffer into the display screen memory replacing the earlier described original pixel values corresponding to the display screen area where the NB always visible display is to be displayed.

[As those skilled in the art would appreciate, when ($\alpha = .5$), both the underlying contents as well as the content of the NB always visible display are equally favored. On the other hand, if ($\alpha < .5$), the underlying content is biased or favored, and if ($\alpha > .5$), the content of the NB always visible display is biased or favored.]

Operations impacting underlying content

Figure 6 illustrates the operational flow of the relevant aspects of NB always visible display application **212** of the present invention, on handling graphics services and display screen memory operation calls, in accordance with one embodiment. As illustrated, upon intercepting a display screen memory operation call, NB always visible display application **212** determines if the call is relevant, i.e. whether the operation will impact the display screen area where the NB always visible display is displayed, block **602**. NB always visible display application **212**

makes the determination by examining the physical location information, and determining if the physical locations intersect with the physical locations of the NB always visible display.

If it is determined that the call is not relevant, i.e. the operation does not impact the display screen area where the NB always visible display is displayed, NB always visible display application **212** forwards the call to its specified recipient, i.e. device drivers **210**, for handling, block **604**. On the other hand, if it is determined that the call is relevant, i.e. the operation does impact the display screen area where the NB always visible display is displayed, NB always visible display application **212** first restores the saved pixel values for the area, block **606**, before forwarding the call to the intended recipient to handle, block **608**. Thereafter, NB always visible display application **212** awaits completion of the operation, block **610**, which may be accomplished in any one of a number of techniques known in the art. Upon detecting completion of the operation, NB always visible display application **212** invokes the blending sub-function to regenerate the blended content, and causes the newly generated blended content to be output substantially as described earlier, block **612**.

In one embodiment, upon copying and saving the pixel values in the display screen buffer corresponding to the display screen area for the NB always visible display (equivalent of operation **502**), instead of immediately performing the earlier described blending (operation **504**), the blending sub-function merely replaces the copied pixel values in the display screen buffer with the last generated blended values (for efficiency of operation). Thereafter, at a predetermined later point in time, the blending sub-function blends the copied and saved pixel values with the content of the NB always visible display to generate new blended content. Again, in a preferred mode of operation, the buffer containing the re-generated blended

content is then marked “dirty”, and an asynchronously executing thread is employed to periodically check for the need to re-output the blended content. As those skilled in the art will appreciate, the delayed re-blending and asynchronous output provide a more efficient manner of operation. The amount of delay is application dependent and may be empirically chosen.

Thus, through interception of calls to display screen memory operations by device driver **210**, NB always visible display application **212** is nevertheless able to facilitate proper processing of the underlying contents, notwithstanding the absence of specifically designed transparent/translucent display support by the operating system, and application **212** is executing as a non-privileged application.

Handling Cursor Events in the Display Area

Figure 7 illustrates the operational flow of the relevant aspects of NB always visible display application **212** of the present invention, for handling cursor events associated with the display area where the NB always visible display is displayed, in accordance with one embodiment. As illustrated, upon intercepting a cursor event notification, NB always visible display application **212** determines if the blended content is fully biased in favor of the NB always visible display, block **702**. In one embodiment, NB always visible display application **212** makes the determination by examining the current blending setting, i.e. the value of α , to see if α is substantially equal to 1.

If not, NB always visible display application **212** increases the current blending setting, i.e. the value of α , and invokes the blending sub-function to re-blend the contents and causing the newly generated blended contents to be output, block **704**. Upon doing so, NB always visible display application **212** forwards the

cursor event to the application associated with the underlying content to handle, block **706**.

On the other hand, if back at block **702**, it is determined that the blended content is fully biased in favor of the NB always visible display, i.e. α is substantially equal to 1, NB always visible display application **212** would handle the cursor event itself, block **708**.

As those skilled in the art would appreciate, the effect of these operations is to cause the NB always visible display to gradually become “hardened” (therefore blocking) if a user moves the cursor into the display area. If the user further clicks on the area before the NB always visible display is fully hardened, by virtue of forwarding the cursor event to an application program associated with an underlying window to handle unless the NB always visible display is “hardened”, the user’s action is effectively interpreted as wanting to interact with the underlying content. On the other hand, if the user waits for the “hardening” of the display area before clicking on the area, by virtue of handling the cursor event under the circumstances, the user’s action is effectively interpreted as wanting to interact with the NB always visible display.

The speed the NB always visible display “hardens” depends on how fast α is incremented towards 1. The pace is application dependent. Further, it is not necessary for α to reach 1 before the NB always visible display is consider “fully” biased or hardened. The level at which NB always visible display is to be deem “fully” biased or hardened is also application dependent.

Accordingly, through interception of cursor event notification, and gradual “hardening” of the NB always visible display, NB always visible display application **212** is also nevertheless able to facilitate proper interaction with the underlying contents or the NB always visible display, notwithstanding the absence of

specifically designed transparent/translucent display support by the operating system/hardware, and application **212** is executing as a non-privileged application.

Example Computer System

5 **Figure 8** illustrates an example computer system suitable for use to practice the present invention, in accordance with one embodiment. As shown, system **800** includes one or more processors **802** and system memory **806**. Additionally, system **800** includes mass storage devices **806** (such as diskette, hard drive, CDROM and so forth), GPIO **808** (for interfacing with I/O devices such as keyboard, cursor control and so forth) and communication interfaces **810** (such as network interface cards, modems and so forth). The elements are coupled to each other via system bus **812**, which represents one or more buses. In the case of multiple buses, they are bridged by one or more bus bridges (not shown). Each of these elements perform its conventional functions known in the art. In particular, system memory

10 **804** and mass storage **806** are employed to store a working copy **814b** and a permanent copy **814a** of the programming instructions implementing NB always visible display application **212**. Except for its use to host the novel NB always visible display application **212** of the present invention, and practice display of NB always visible displays, such as on-line monitor **106**, task bar **124**, animated assistant **134**

15 and logo/mark **144**. The constitution of these elements **802-814** are known, and accordingly will not be further described.

20

 Accordingly, a set of techniques associated with efficient rendering of non-blocking always visible displays have been described. It can be seen that the

25 techniques may effectuate the desired displays without requiring supports from the operating system or hardware, that are specifically designed for the rendering of

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While the present invention has been described in terms of the above
5 illustrated embodiments, those skilled in the art will recognize that the invention is not
limited to the embodiments described. The present invention can be practiced with
modification and alteration within the spirit and scope of the appended claims. Thus,
the description is to be regarded as illustrative instead of restrictive on the present
invention.

CLAIMS

What is claimed is:

- 1 1. A method comprising:
 - 2 copying and saving first pixel values corresponding to a first display screen
 - 3 area;
 - 4 blending the copied first pixel values with second pixel values to generate
 - 5 third pixel values;
 - 6 replacing the original first pixel values with the third pixel values to effectuate
 - 7 display of a non-blocking always visible display;
 - 8 monitoring for display operations that impact the first display screen area;
 - 9 upon detection of such a display operation, replacing said third pixel values
 - 10 with said first pixel values using said saved first pixel values;
 - 11 upon completion of the detected operation, copying and saving fourth pixel
 - 12 values corresponding to the first display screen area;
 - 13 blending the copied fourth pixel values with said second pixel values to
 - 14 generate fifth pixel values;
 - 15 replacing the original fourth pixel values with the fifth pixel values to sustain
 - 16 the non-blocking always visible characteristic of the non-blocking always visible
 - 17 display.
- 1 2. The method of claim 1, wherein the method further comprises
 - 2 marking a buffer holding said third/fifth pixel values changed; and
 - 3 periodically checking to determining if said buffer has been marked changed.

- 1 7. A method comprising:
 - 2 copying and saving first pixel values corresponding to a first display screen
 - 3 area;
 - 4 blending the copied first pixel values with second pixel values corresponding
 - 5 to a non-blocking always visible display to generate third pixel values;

6 replacing the original first pixel values with the third pixel values to effectuate
7 display of the non-blocking always visible display;
8 intercepting cursor events associated with said first display screen area; and
9 determining whether the cursor events are to be handled by an application
10 program associated with said non-blocking always visible display or an application
11 program associated with an underlying display window, based at least in part on a
12 current blending bias between said non-blocking always visible display and said
13 underlying display windows.

1 8. The method of claim 7, wherein said blending is performed in accordance
2 with a current blending setting, and said determining comprises determining if the
3 current blending setting is greater than a predetermined threshold, favoring contents
4 of said non-blocking always visible display.

1 9. The method of claim 7, wherein said non-blocking always visible display is a
2 selected one of an on-line data monitor, a tool bar, a logo/mark, and an animated
3 assistant.

1 10. A method comprising:
2 copying and saving first pixel values corresponding to a first display screen
3 area on which a non-block always visible on-line data monitor is to be rendered;
4 blending the copied first pixel values with second pixel values corresponding
5 to the non-block always visible on-line data monitor to generate third pixel values;
6 and
7 replacing the original first pixel values with the third pixel values to effectuate
8 display of the on-line data monitor with the non-blocking always visible attribute to

1 11. The method of claim 10, wherein the method further comprises
2 monitoring for display operations that impact the first display screen area;
3 upon detection of such a display operation, replacing said third pixel values
4 with said first pixel values using said saved first pixel values;
5 upon completion of said display operation, copying and saving fourth pixel
6 values corresponding to the first display screen area;
7 blending the copied fourth pixel values with said second pixel values to
8 generate fifth pixel values; and
9 replacing the original fourth pixel values with the fifth pixel values to sustain
10 the non-blocking always visible characteristic of the on-line monitor.

1 12. The method of claim 10, wherein the method further comprises
2 intercepting cursor events associated with said first display screen area; and
3 determining whether the cursor events are to be handled by an application
4 program associated with said non-blocking always visible on-line data monitor or an
5 application program associated with an underlying display window, based at least in
6 part on a current blending bias between said non-blocking always visible on-line
7 data monitor and underlying display windows.

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1 16. A method comprising:

2 copying and saving first pixel values corresponding to a first display screen
3 area on which a non-block always visible logo/mark is to be rendered;
4 blending the copied first pixel values with second pixel values corresponding
5 to the non-block always visible logo/mark to generate third pixel values; and
6 replacing the original first pixel values with the third pixel values to effectuate
7 display of the logo/mark with the non-blocking always visible attribute.

1 17. The method of claim 16, wherein the method further comprises
2 monitoring for display operations that impact the first display screen area;
3 upon detection of such a display operation, replacing said third pixel values
4 with said first pixel values using said saved first pixel values;
5 upon completion of said display operation, copying and saving fourth pixel
6 values corresponding to the first display screen area;
7 blending the copied fourth pixel values with said second pixel values to
8 generate fifth pixel values; and
9 replacing the original fourth pixel values with the fifth pixel values to sustain
10 the non-blocking always visible characteristic of the logo/mark.

1 18. The method of claim 16, wherein the method further comprises
2 intercepting cursor events associated with said first display screen area; and
3 determining whether the cursor events are to be handled by an application
4 program associated with said non-blocking always visible logo/mark or an
5 application program associated with an underlying display window, based at least in
6 part on a current blending bias between said non-blocking always visible logo/mark
7 and underlying display windows.

1 19. A method comprising:
2 copying and saving first pixel values corresponding to a first display screen
3 area on which a non-block always visible animated assistant is to be rendered;
4 blending the copied first pixel values with second pixel values corresponding
5 to the non-block always visible animated assistant to generate third pixel values;
6 and
7 replacing the original first pixel values with the third pixel values to effectuate
8 display of the animated assistant with the non-blocking always visible attribute.

1 20. The method of claim 19, wherein the method further comprises
2 monitoring for display operations that impact the first display screen area;
3 upon detection of such a display operation, replacing said third pixel values
4 with said first pixel values using said saved first pixel values;
5 upon completion of said display operation, copying and saving fourth pixel
6 values corresponding to the first display screen area;
7 blending the copied fourth pixel values with said second pixel values to
8 generate fifth pixel values; and
9 replacing the original fourth pixel values with the fifth pixel values to sustain
10 the non-blocking always visible characteristic of the animated assistant.

1 21. The method of claim 19, wherein the method further comprises
2 intercepting cursor events associated with said first display screen area; and
3 determining whether the cursor events are to be handled by an application
4 program associated with said non-blocking always visible animated assistant or an
5 application program associated with an underlying display window, based at least in

6 part on a current blending bias between said non-blocking always visible animated
7 assistant and underlying display windows.

1 22. An apparatus comprising:
2 storage medium having stored therein programming instructions designed to
3 copy and save first pixel values corresponding to a first display screen
4 area,
5 blend the copied first pixel values with second pixel values corresponding
6 to a non-blocking always visible display to generate third pixel values,
7 replace the original first pixel values with the third pixel values to
8 effectuate display of the non-blocking always visible display,
9 monitor for display operations that impact the first display screen area,
10 upon detection of such a display operation, replace said third pixel values
11 with said first pixel values using said saved first pixel values,
12 copy and save fourth pixel values corresponding to the first display screen
13 area,
14 blend the copied fourth pixel values with said second pixel values to
15 generate fifth pixel values,
16 replace the original fourth pixel values with the fifth pixel values to sustain
17 the non-blocking always visible characteristic of the non-blocking
18 always visible display; and
19 a processor coupled to the storage medium to execute the programming
20 instruction.

1 23. The apparatus of claim 1, wherein the programming instructions are further
2 designed to

3 mark a buffer holding said third/fifth pixel values changed, and
4 periodically check to determining if said buffer has been marked changed.

1 24. The apparatus of claim 22, wherein said programming instructions are
2 designed to
3 intercept invocations of display screen memory operations; and
4 determine if targeted display screen areas of the display screen memory
5 operations being invoked intersect with said first screen display area.

1 25. The apparatus of claim 22, wherein the programming instructions are further
2 designed to
3 intercept cursor events associated with said first display screen area, and
4 determine whether the cursor events are to be handled by an application
5 program associated with said non-blocking always visible display or an application
6 program associated with an underlying display window.

1 26. The apparatus of claim 25, wherein said programming instructions are
2 designed to perform each of said blending in accordance with a then current
3 blending setting, and perform said determine by determining if the current blending
4 setting is greater than a predetermined threshold, favoring contents of said non-
5 blocking always visible display.

1 27. The apparatus of claim 22, wherein said non-blocking always visible display
2 is a selected one of an on-line data monitor, a tool bar, a logo/mark, and an
3 animated assistant.

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1 28. An apparatus comprising:
2 storage medium having stored therein programming instructions designed to
3 copy and save first pixel values corresponding to a first display screen
4 area,
5 blend the copied first pixel values with second pixel values corresponding
6 to a non-blocking always visible display to generate third pixel values,
7 replace the original first pixel values with the third pixel values to
8 effectuate display of the non-blocking always visible display,
9 intercept cursor events associated with said first display screen area, and
10 determine whether the cursor events are to be handled by an application
11 program associated with said non-blocking always visible display or an
12 application program associated with an underlying display window,
13 based at least in part on a current blending bias between said non-
14 blocking always visible display and said underlying display windows;
15 and
16 a processor coupled to the storage medium to execute the programming
17 instructions.

1 29. The apparatus of claim 28, wherein said programming instructions are
2 designed to perform said blend in accordance with a current blending setting, and
3 perform said determine by determining if the current blending setting is greater than
4 a predetermined threshold, favoring contents of said non-blocking always visible
5 display.

1 30. The apparatus of claim 28, wherein said non-blocking always visible display
2 is a selected one of an on-line data monitor, a tool bar, a logo/mark, and an
3 animated assistant.

1 31. An apparatus comprising:
2 storage medium having stored therein programming instructions designed to
3 copy and save first pixel values corresponding to a first display screen
4 area on which a non-block always visible on-line data monitor is to be
5 rendered;
6 blend the copied first pixel values with second pixel values corresponding
7 to the non-block always visible on-line data monitor to generate third
8 pixel values, and
9 replace the original first pixel values with the third pixel values to
10 effectuate display of the on-line data monitor with the non-blocking
11 always visible attribute to provide visual differentiation between said
12 on-line data monitor and underlying display windows associated with
13 locally executed application programs; and
14 a processor coupled to the storage medium to execute the programming
15 instructions.

1 32. The apparatus of claim 31, wherein the programming instructions are further
2 designed to
3 monitor for display operations that impact the first display screen area,
4 upon detection of such a display operation, replace said third pixel values
5 with said first pixel values using said saved first pixel values,

1 33. The apparatus of claim 31, wherein the programming instructions are further
2 designed to
3 intercept cursor events associated with said first display screen area, and
4 determine whether the cursor events are to be handled by an application
5 program associated with said non-blocking always visible on-line data monitor or an
6 application program associated with an underlying display window, based at least in
7 part on a current blending bias between said non-blocking always visible on-line
8 data monitor and underlying display windows.

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11 a processor coupled to the storage medium to execute the programming
12 instructions.

1 35. The apparatus of claim 34, wherein the programming instructions are further
2 designed to
3 monitor for display operations that impact the first display screen area,
4 upon detection of such a display operation, replace said third pixel values
5 with said first pixel values using said saved first pixel values,
6 upon completion of said display operation, copy and save fourth pixel values
7 corresponding to the first display screen area,
8 blend the copied fourth pixel values with said second pixel values to generate
9 fifth pixel values, and
10 replace the original fourth pixel values with the fifth pixel values to sustain the
11 non-blocking always visible characteristic of the task bar.

1 36. The apparatus of claim 34, wherein the programming instructions are further
2 designed to
3 intercept cursor events associated with said first display screen area, and
4 determine whether the cursor events are to be handled by an application
5 program associated with said non-blocking always visible task bar or an application
6 program associated with an underlying display window, based at least in part on a
7 current blending bias between said non-blocking always visible task bar and
8 underlying display windows.

1 37. An apparatus comprising:
2 storage medium having stored therein programming instructions designed to

1 38. The apparatus of claim 37, wherein the programming instructions are further
2 designed to
3 monitor for display operations that impact the first display screen area,
4 upon detection of such a display operation, replace said third pixel values
5 with said first pixel values using said saved first pixel values,
6 upon completion of said display operation, copy and save fourth pixel values
7 corresponding to the first display screen area,
8 blend the copied fourth pixel values with said second pixel values to generate
9 fifth pixel values, and
10 replace the original fourth pixel values with the fifth pixel values to sustain the
11 non-blocking always visible characteristic of the logo/mark.

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4 determine whether the cursor events are to be handled by an application
5 program associated with said non-blocking always visible logo/mark or an
6 application program associated with an underlying display window, based at least in
7 part on a current blending bias between said non-blocking always visible logo/mark
8 and underlying display windows.

1 40. An apparatus comprising:
2 storage medium having stored therein programming instructions designed to
3 copy and save first pixel values corresponding to a first display screen
4 area on which a non-block always visible animated assistant is to be
5 rendered,
6 blend the copied first pixel values with second pixel values corresponding
7 to the non-block always visible animated assistant to generate third
8 pixel values, and
9 replace the original first pixel values with the third pixel values to
10 effectuate display of the animated assistant with the non-blocking
11 always visible attribute; and
12 a processor coupled to the storage medium to execute the programming
13 instructions.

1 41. The apparatus of claim 40, wherein the programming instructions are further
2 designed to
3 monitor for display operations that impact the first display screen area,
4 upon detection of such a display operation, replace said third pixel values
5 with said first pixel values using said saved first pixel values,

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6 upon completion of said display operation, copy and save fourth pixel values
7 corresponding to the first display screen area,
8 blend the copied fourth pixel values with said second pixel values to generate
9 fifth pixel values, and
10 replace the original fourth pixel values with the fifth pixel values to sustain the
11 non-blocking always visible characteristic of the animated assistant.

1 42. The apparatus of claim 40, wherein the programming instructions are further
2 designed to
3 intercept cursor events associated with said first display screen area, and
4 determine whether the cursor events are to be handled by an application
5 program associated with said non-blocking always visible animated assistant or an
6 application program associated with an underlying display window, based at least in
7 part on a current blending bias between said non-blocking always visible animated
8 assistant and underlying display windows.

1

A non-blocking always visible display application is provided to copy and save first pixel values corresponding to a first display screen area, blend the copied first pixel values with second pixel values corresponding to a non-blocking always visible display to generate third pixel values, and replace the original first pixel values with the third pixel values to effectuate display of the non-blocking always visible display. In one embodiment, the application further monitors for display operations that impact the first display screen area, and re-blend accordingly. In one embodiment, the re-blending and replacement are advantageously delayed. In another embodiment, the application further intercepts and causes cursor events to be handled properly, based at least in part on a current blending bias between the non-blocking always visible display, and the underlying display windows.

100

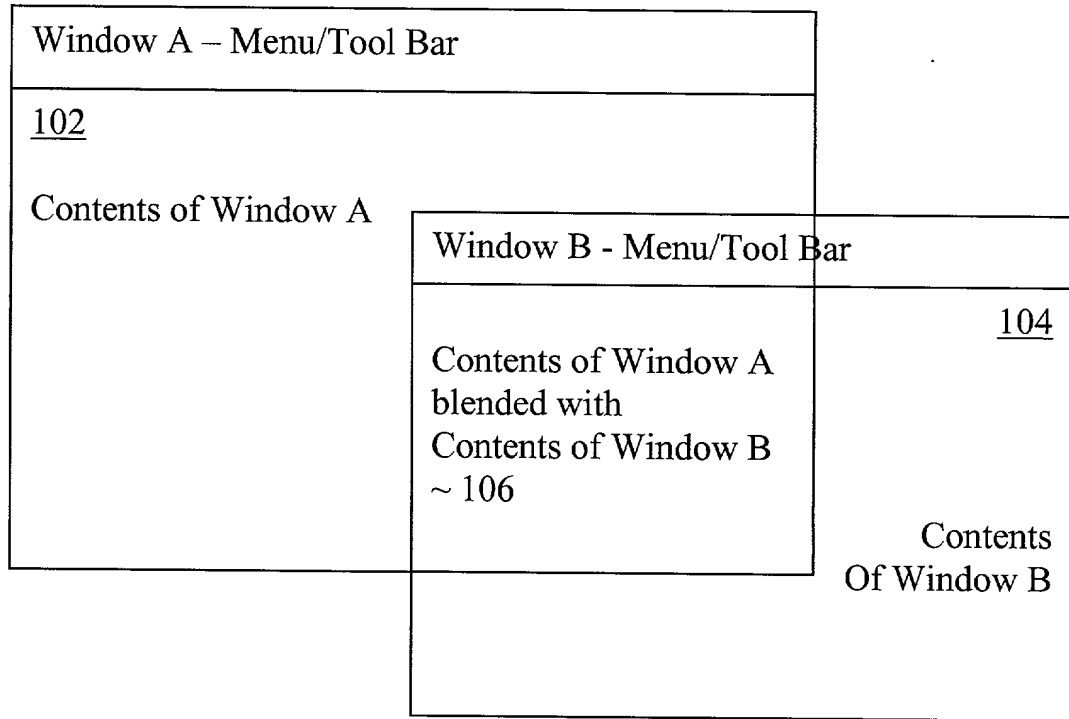


Figure 1a

100

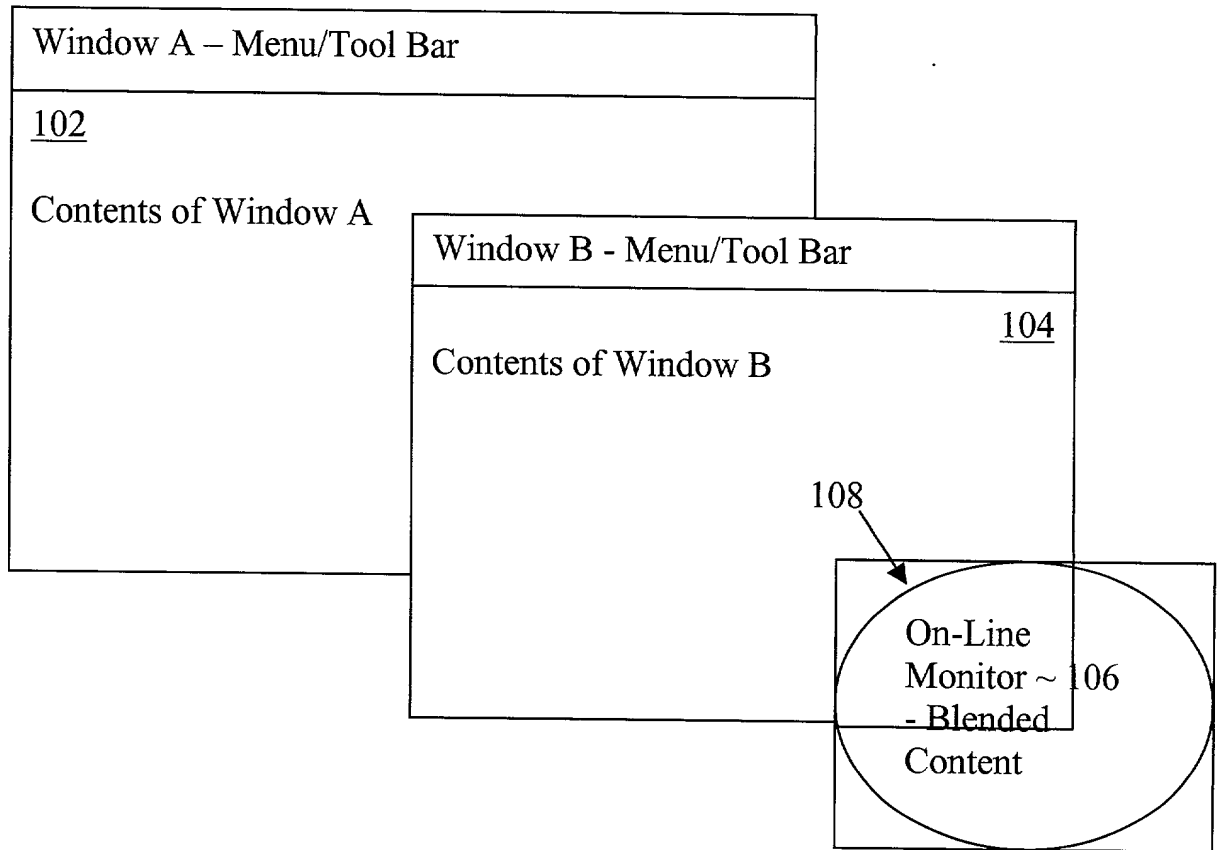


Figure 1b

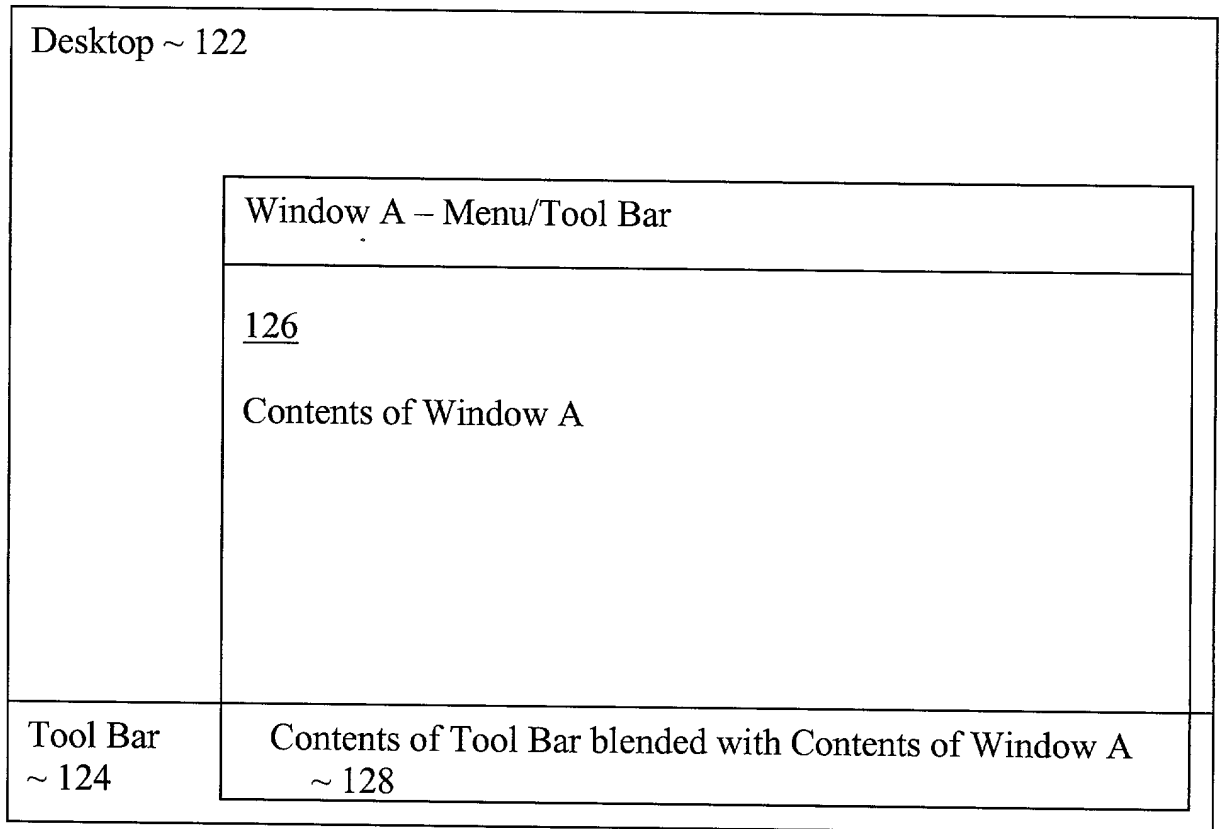


Figure 1c

130

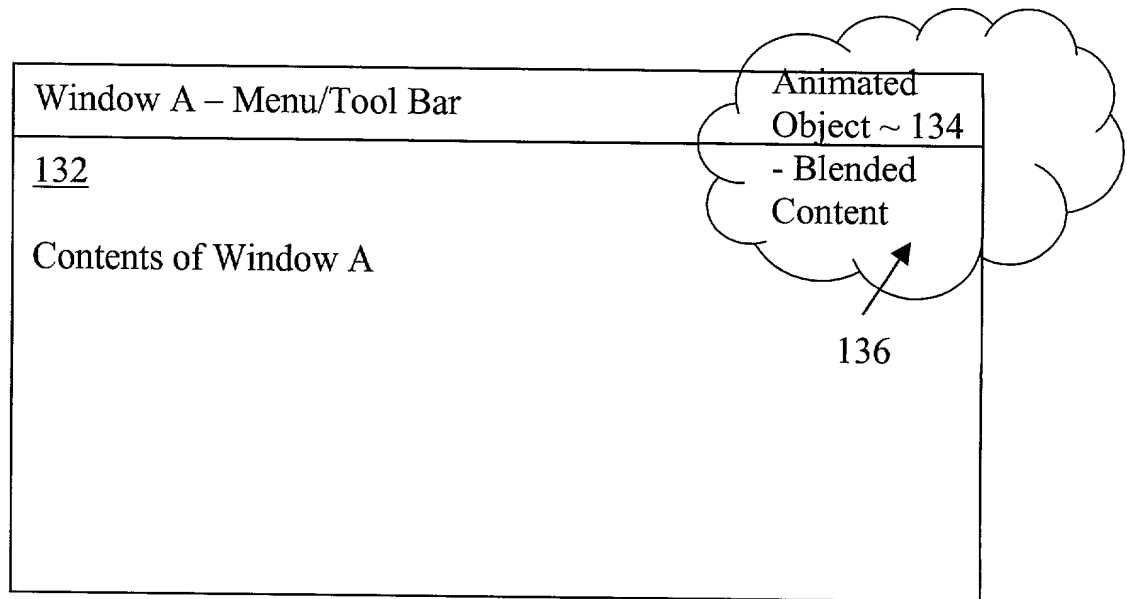


Figure 1d

140

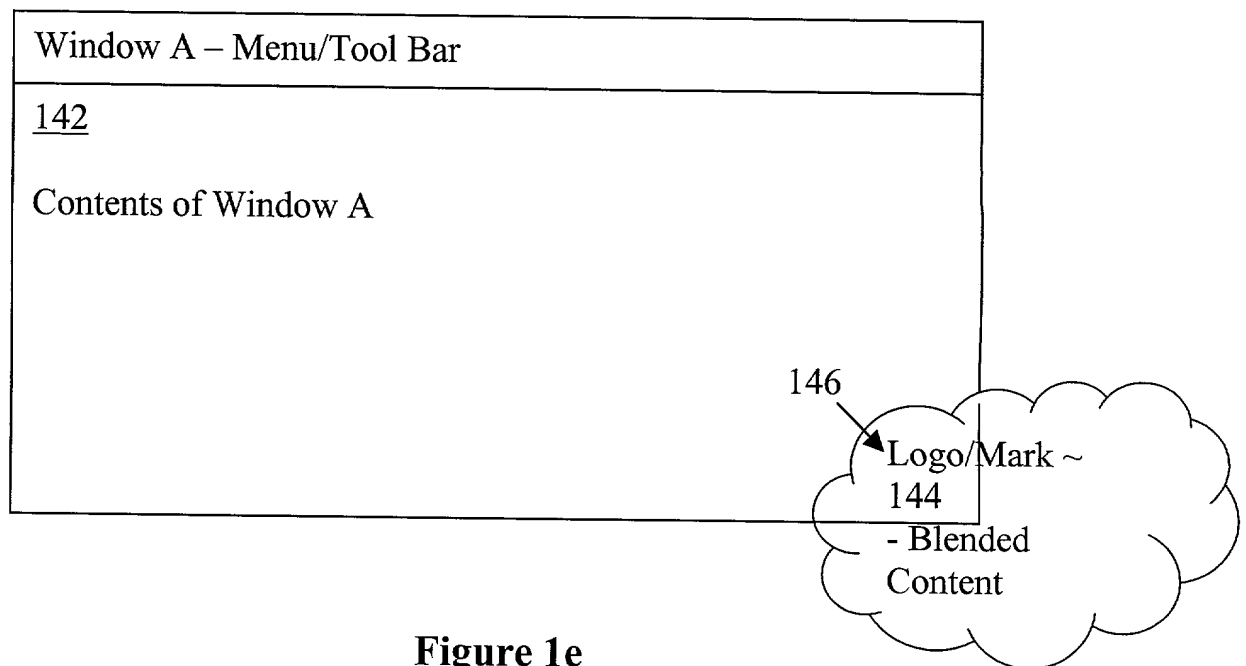


Figure 1e

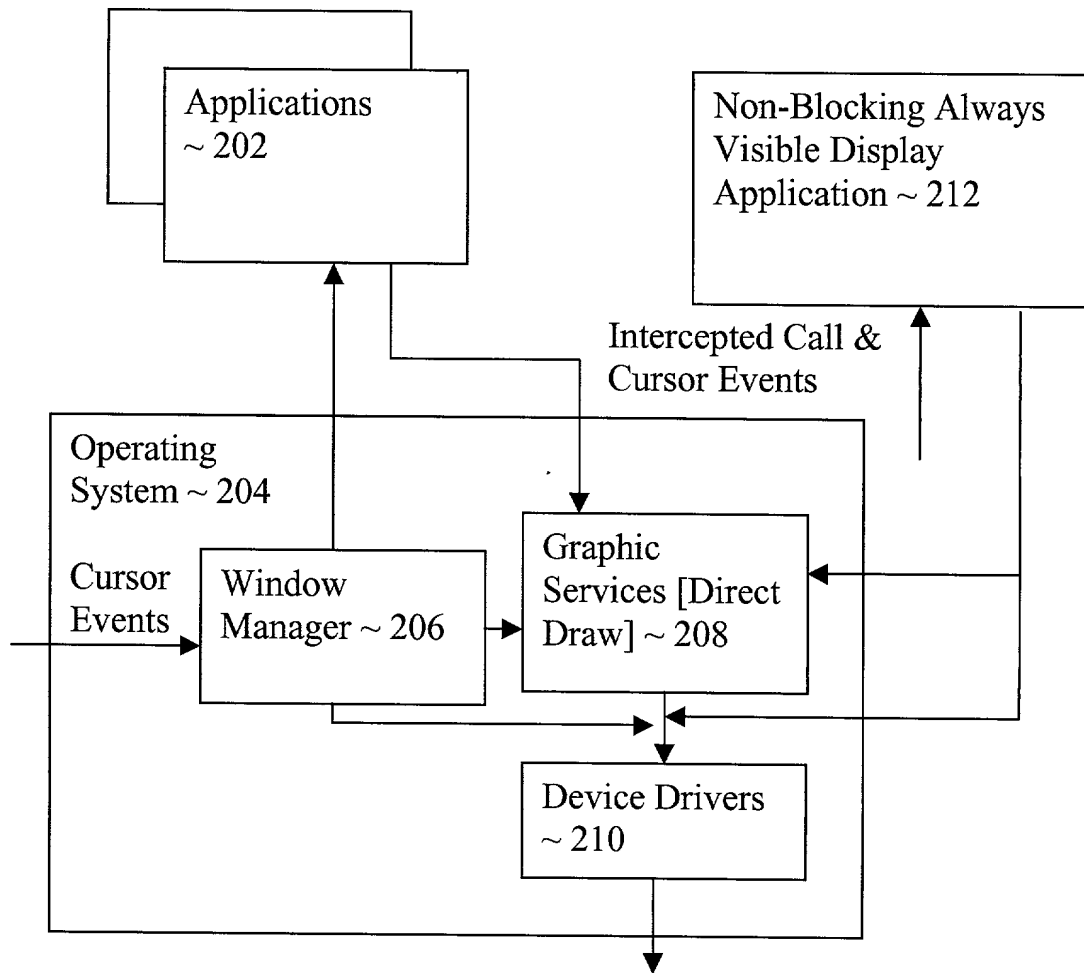


Figure 2

1990-1991		1991-1992		1992-1993		1993-1994		1994-1995		1995-1996		1996-1997		1997-1998		1998-1999		1999-2000		2000-2001		2001-2002		2002-2003		2003-2004		2004-2005		2005-2006		2006-2007		2007-2008		2008-2009		2009-2010		2010-2011		2011-2012		2012-2013		2013-2014		2014-2015		2015-2016		2016-2017		2017-2018		2018-2019		2019-2020		2020-2021		2021-2022		2022-2023		2023-2024		2024-2025		2025-2026		2026-2027		2027-2028		2028-2029		2029-2030		2030-2031		2031-2032		2032-2033		2033-2034		2034-2035		2035-2036		2036-2037		2037-2038		2038-2039		2039-2040		2040-2041		2041-2042		2042-2043		2043-2044		2044-2045		2045-2046		2046-2047		2047-2048		2048-2049		2049-2050		2050-2051		2051-2052		2052-2053		2053-2054		2054-2055		2055-2056		2056-2057		2057-2058		2058-2059		2059-2060		2060-2061		2061-2062		2062-2063		2063-2064		2064-2065		2065-2066		2066-2067		2067-2068		2068-2069		2069-2070		2070-2071		2071-2072		2072-2073		2073-2074		2074-2075		2075-2076		2076-2077		2077-2078		2078-2079		2079-2080		2080-2081		2081-2082		2082-2083		2083-2084		2084-2085		2085-2086		2086-2087		2087-2088		2088-2089		2089-2090		2090-2091		2091-2092		2092-2093		2093-2094		2094-2095		2095-2096		2096-2097		2097-2098		2098-2099		2099-2100		2100-2101		2101-2102		2102-2103		2103-2104		2104-2105		2105-2106		2106-2107		2107-2108		2108-2109		2109-2110		2110-2111		2111-2112		2112-2113		2113-2114		2114-2115		2115-2116		2116-2117		2117-2118		2118-2119		2119-2120		2120-2121		2121-2122		2122-2123		2123-2124		2124-2125		2125-2126		2126-2127		2127-2128		2128-2129		2129-2130		2130-2131		2131-2132		2132-2133		2133-2134		2134-2135		2135-2136		2136-2137		2137-2138		2138-2139		2139-2140		2140-2141		2141-2142		2142-2143		2143-2144		2144-2145		2145-2146		2146-2147		2147-2148		2148-2149		2149-2150		2150-2151		2151-2152		2152-2153		2153-2154		2154-2155		2155-2156		2156-2157		2157-2158		2158-2159		2159-2160		2160-2161		2161-2162		2162-2163		2163-2164		2164-2165		2165-2166		2166-2167		2167-2168		2168-2169		2169-2170		2170-2171		2171-2172		2172-2173		2173-2174		2174-2175		2175-2176		2176-2177		2177-2178		2178-2179		2179-2180		2180-2181		2181-2182		2182-2183		2183-2184		2184-2185		2185-2186		2186-2187		2187-2188		2188-2189		2189-2190		2190-2191		2191-2192		2192-2193		2193-2194		2194-2195		2195-2196		2196-2197		2197-2198		2198-2199		2199-2200		2200-2201		2201-2202		2202-2203		2203-2204		2204-2205		2205-2206		2206-2207		2207-2208		2208-2209		2209-2210		2210-2211		2211-2212		2212-2213		2213-2214		2214-2215		2215-2216		2216-2217	
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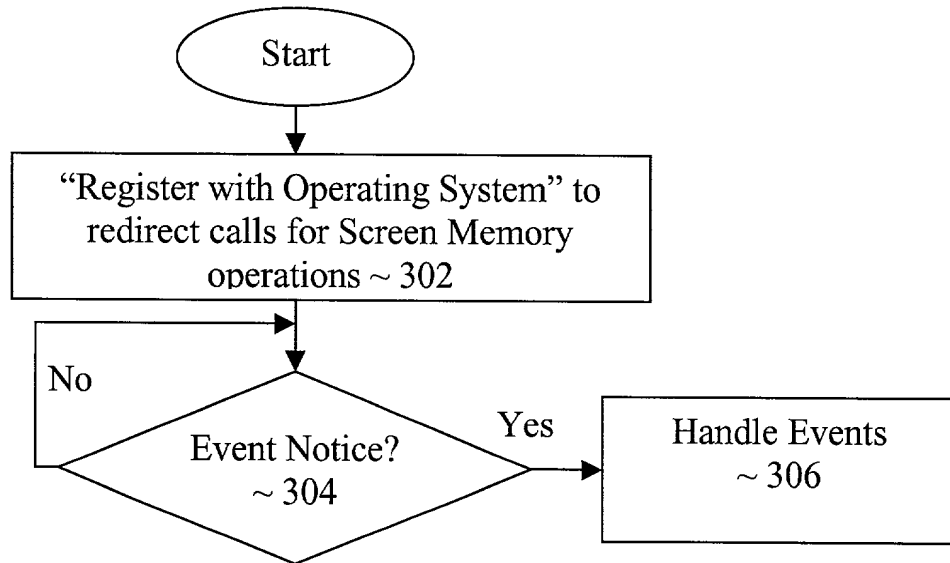


Figure 3

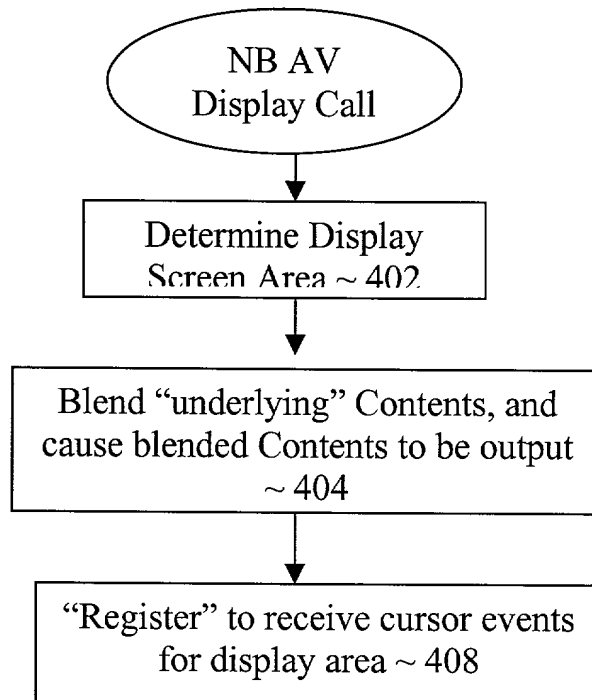


Figure 4

[illegible]

Figure 5

18

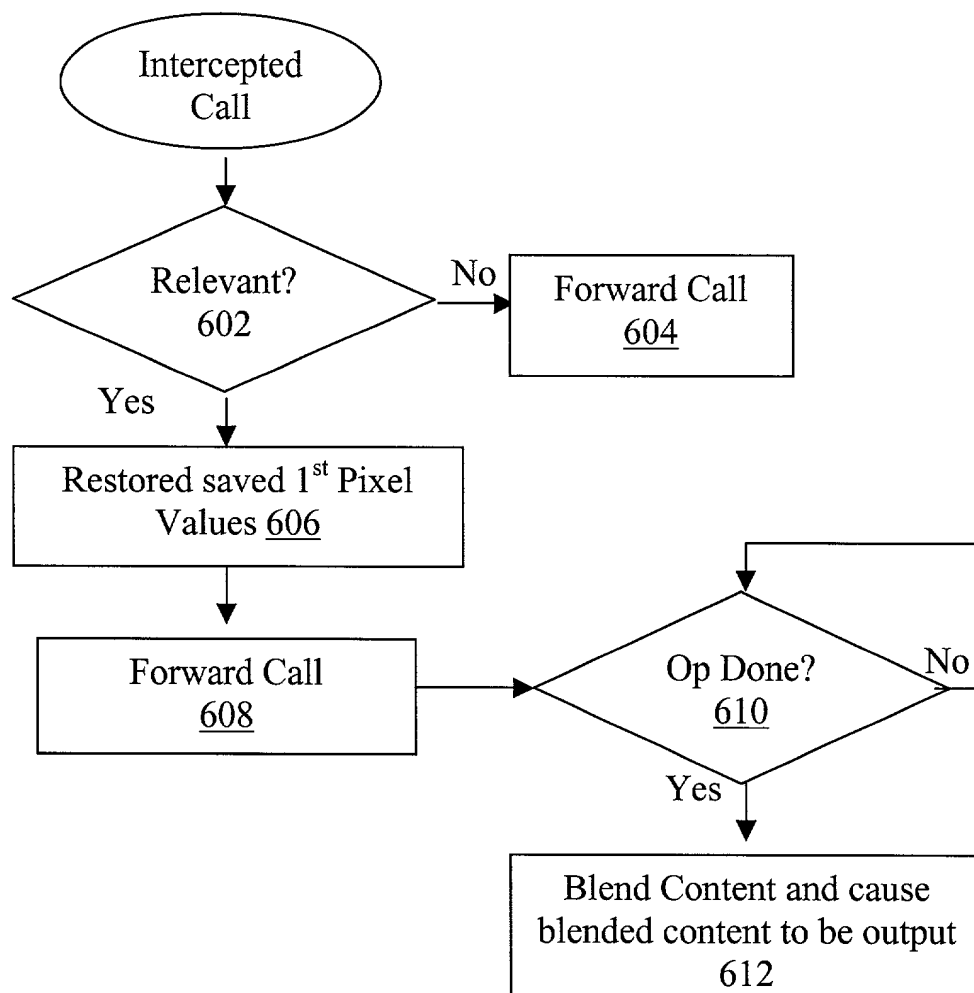


Figure 6

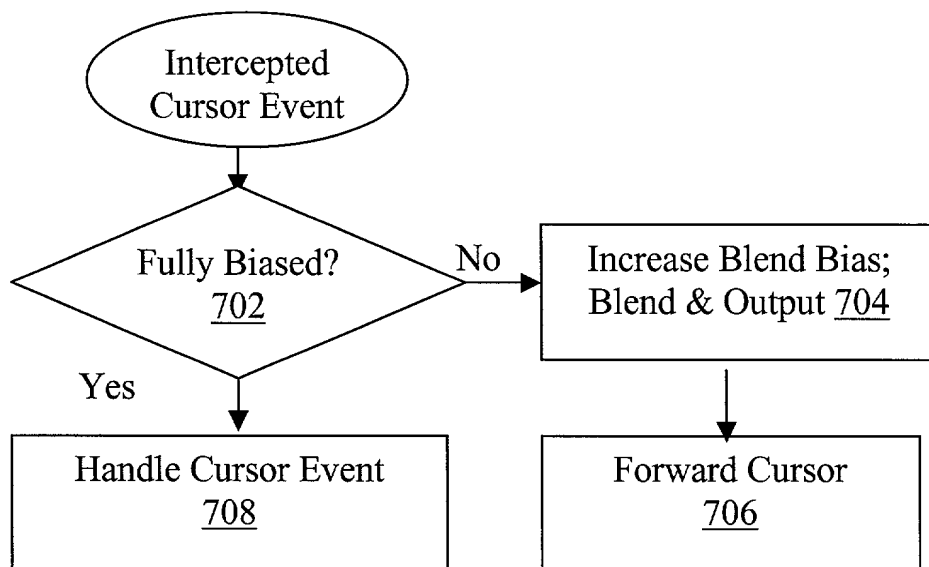


Figure 7

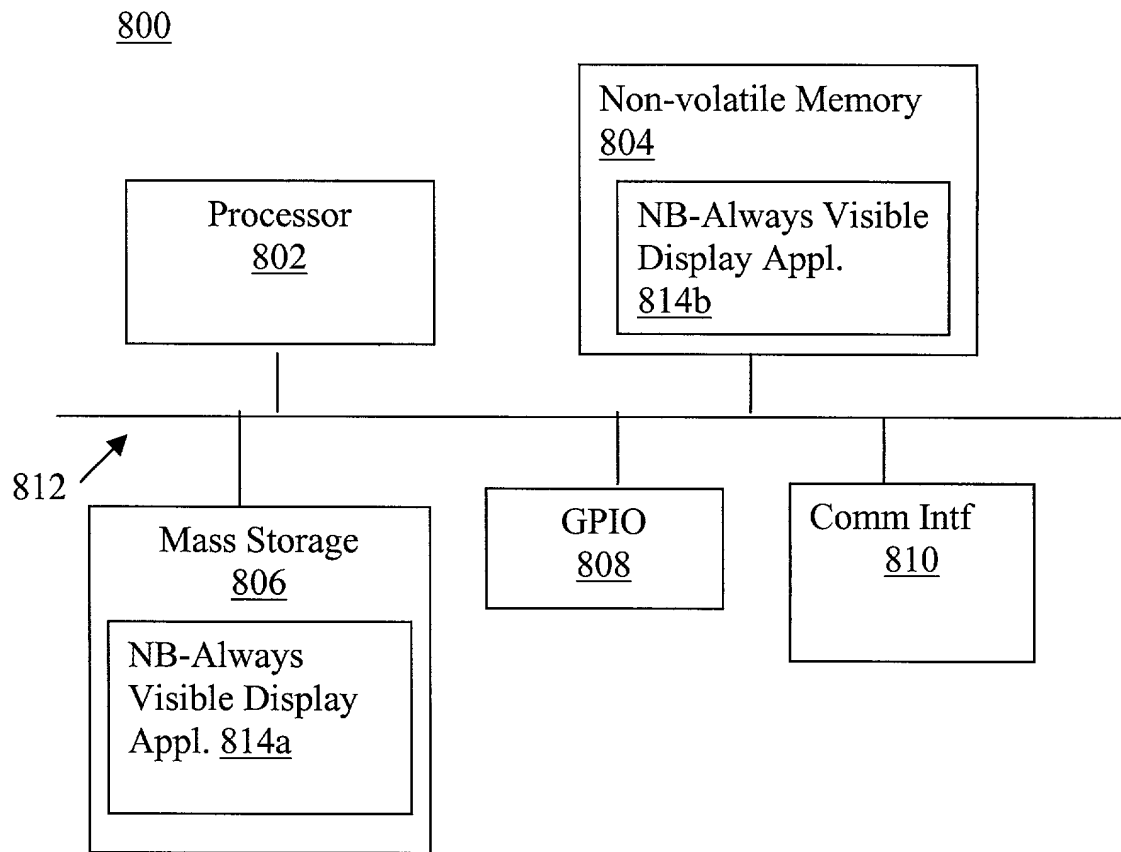


Figure 8

PATENT

-1-

[illegible]

Post Office Address 3231 E. Ames Lake Drive NE
Redmond, Washington 98053

[illegible]

Title 37, Code of Federal Regulations, Section 1.56
Duty to Disclose Information Material to Patentability

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) Prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) The closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application;

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.